

of *Swainsona canescens*. Presumably, bees foraging on small, few-flowered plants in less favourable sites would move between plants more often and thus effect a relatively high level of cross-pollination. Thus, due to the behavioural patterns of the bee pollinators, the growth of plants in response to seasonal influences may lead to enhanced outcrossing in unfavourable years and to increased levels of self-pollination in favourable years. An investigation of this hypothesis would provide valuable insights into the reproductive strategies adopted by *S. canescens* and related species in coping with the environmental vicissitudes of the Australian arid zone.

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SOME VERTEBRATES RECORDED ON A VISIT TO QUEEN VICTORIA SPRING IN DECEMBER 1977

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Queen Victoria Spring is located 70 kilometres north of Zanthus, a siding on the Transcontinental Railway. A general description and history of the area has been documented by Slater and Lindgren (1955) and Burbidge *et al.* (1976). From November 30 to December 13, 1977, three members of the Zoology Department, University of Western Australia, camped 2.5 kilometres south of the spring. During this visit the average maximum temperature was 39.2° C and the average minimum 15.0° C. The humidity varied between 34% and 86%. Some light rain fell on November 30 and December 12 but sufficient to only form 1 or 2 pools of water in the claypan adjacent to the spring. The spring itself (more correctly a soak) was dug out to a depth of 1.8 metres but no water was found, only damp sand. There was no evidence that the spring had been used recently as a network of spider webs covered the spring depression.

The following is an annotated list of the mammals, frogs and reptiles recorded during this visit. An extensive bird list for the area has been compiled by Serventy (1956) and Slater and Lindgren (1955). All specimens collected during this visit were lodged with the Western Australian Museum and accession numbers are quoted.

MAMMALS

Western Grey Kangaroo (*Macropus fuliginosus*) Commonly sighted in the sand dune area to the east of the spring and in the vicinity of the campsite (mallee/spinifex). One found dead on the track 0.5 kilometres south of the spring.

Euro (*Macropus robustus*) One seen near the south boundary of the Queen Victoria Spring Wildlife Sanctuary. Several seen near granite outcrops between 5 mile and 12 mile rockholes, north-west of Cundelee Mission.

Ride's Ningau (*Ningau ridei*) One male (5.5 grams, M15986) trapped in *Callitris/Eucalypt* 0.5 kilometres south of the spring.

Troughton's Dunnart (*Sminthopsis ooldea*) One female (6.0 grams, M15895) trapped in Mallee/Spinifex 2.5 kilometres south of the spring.

The following bat species were shot at night on the side of the claypan at Queen Victoria Spring.

Little Flat Bat (*Tadarida planiceps*) — male 9.0 grams, M18475.

White-striped Bat (*Tadarida australis*) — female (pregnant) 46.0 grams, M18473.

Gould's Wattled Bat (*Chalinolobus gouldii*) — female 17.5 grams, M18474; female 17.5 grams, M18477; male 11.5 grams, M18478.

Little Broad-nosed Bat (*Nycticeius greyi*) — female 9.5 grams, M18476.

House Mouse (*Mus musculus*) One female trapped on a sand dune 2.5 kilometres north of the spring.

Domestic Cat (*Felis catus*) One seen near the south boundary of the Queen Victoria Spring Wildlife Sanctuary.

Camel (*Camelus dromedarius*) One skull found at Emu rockhole, west of Cundelee Mission.

A total of 13 native mammal species (1 macropod, 3 dasyurid, 3 rodent, and 6 bat species) were recorded by Burbidge *et al* (1976) in the Queen Victoria Spring Wildlife Sanctuary. Of the mammals noted during this recent visit, the Euro (*Macropus robustus*) is the only species not previously recorded. One of the objectives of this trip to Queen Victoria Spring was to perform capture and recapture studies on the native rodents *Notomys alexis* and *N. mitchellii* which were reported to be abundant in March 1976. A total of 2050 trapnights were set; however no *Notomys* were trapped.

FROGS

Members of only one species, *Neobatrachus centralis*, were recorded during this trip. These were found on the sand surrounding the claypan adjacent to Queen Victoria Spring after light rain had fallen. This species was also found in the 5 mile rockhole, north-west of Cundelee Mission. This is the only species of frog recorded by Burbidge *et al.* (1976).

REPTILES

(Western Australian Museum accession numbers R58701 and R58703 — R58737)

GEKKONIDAE

Nephrurus laevisisimus — 2 kilometres south of spring on track (spotlighting).

Gehyra variegata — 3.5 kilometres south of spring on the base of a mallee; 2.0 kilometres south of the spring in a dead *Xanthorrhoea*; 8.0 kilometres south of Cundelee Mission at Ponton Creek.

**Diplodactylus conspicillatus* — 4.5 kilometres south of the spring on a mallee stump.

D. strophurus — 4.5 kilometres south of spring under *Melaleuca* sp.

D. damaeus — on the sand around the claypan adjacent to the spring; 4.5 kilometres south of the spring.

**Heteronota binoei* — 8.0 kilometres north-west of Cundelee Mission at 5 mile rockhole.

AGAMIDAE

**Amphibolurus nuchalis* — dug out of burrow in red sand at camp site 2.5 kilometres south of the spring.

A. clayi — 2.0 kilometres south of the spring under spinifex.

A. minor — 13.0 kilometres east of the spring at Streich Mound on a sand dune.

A. fordi — 2.0 kilometres south of the spring under spinifex.

A. isolepis — 3.5 kilometres south of the spring in mallee/saltbush.

A. cristatus — 16.0 kilometres west of Cundelee Mission between 12 mile and Emu rockhole.

Moloch horridus — 2.5 kilometres south of the spring in mallee/spinifex; 2.0 kilometres north of the spring on a sand dune.

SCINCIDAE

Ctenotus quattuordecimlineatus — 1.0 kilometres north of the spring on a sand dune.

C. atlas — 3.5 kilometres south of the spring in mallee/spinifex.

C. schomburgkii — 3.5 kilometres south of the spring in mallee/spinifex.

**Lerista muelleri* — 8.0 kilometres north-west of Cundelee Mission at 5 mile rockhole.

**Morethia butleri* — 3.5 kilometres south of the spring in a log in mallee/spinifex.

**Tiliqua rugosa* — one seen crossing the Zanthus-Cundelee road.

**T. occipitalis* — 2.0 kilometres south of the spring in Callitris/mallee.

VARANIDAE

**Varanus gouldii* — 1.5 kilometres south of the spring in mallee/spinifex.

ELAPIDAE

**Furina diadema* — cat capture at Cundelee Mission.

**Pseudonaja modesta* — Cundelee Mission.

**Vermicella semifasciata* — 4.0 kilometres south of the spring on track at night.

A total of 24 species of reptile were recorded during this trip to Queen Victoria Spring, of which 11 species (those marked with an asterisk) have not previously been collected in this area. Several of the species collected are on the edge or just outside their known range as described by Cogger (1979). These include *Amphibolurus nuchalis*, *A. minor*, *Lerista muelleri*, *Diplodactylus strophurus* and *Furina diadema*.

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EXTRAFLOREAL NECTARIES IN *ALYOGYNE HAKEIFOLIA* (GIORD.) ALEF. (MALVACEAE) AND THEIR ASSOCIATION WITH ANTS.

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ABSTRACT

Alyogyne hakeifolia possesses extrafloral nectaries which attract ants during the day and night. The extrafloral nectaries are associated with bracts on the stem, just below the flower. Nectar was never observed in the field but droplets formed when branches were kept at a low temperature. The extrafloral nectaries function throughout bud development, flowering and early maturity of the fruit. Bushes in the Kalbarri National

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